

440 is an Apache web server. The market system manager 450 is a CyberManager 2000 (CMG-2000) from Hybrid Networks, Inc. The contention server 455 and the satellite receiver 460 are from Cidera Co. The satellite receiver 460 is a Global Positioning System (GPS) receiver.

5 The router 420 connects with the regional aggregation point 300 and the head end 500 over the links 123 and 127, respectively. The router 420 connects with the switch 425 over a link 411. The link 411 is a Gigabit Ethernet connection. The switch 425 connects with the market performance management system 430 over a link 412. The switch 425 connects with the market system manager 450 over a link 416. The switch 425 connects with the contention server 455 over a link 417. The contention server 455 connects with the satellite receiver 460 over a link 418. The link 418 is a coaxial cable.

10 In operation, the market performance management system 430 collects performance information for the broadband wireless system 100. The market performance management system 430 communicates with other components in the broadband wireless system 100 through the switch 425 and the router 420 to collect the performance information. The operation of the router 420 and the switch 425 is well known to those skilled in the art and is not discussed for the sake of brevity. The market database system 435 stores the collected performance information. The market reporting system 440 retrieves the performance information from the market database system 435 and provides user-friendly formats of the performance information. Examples of the user-friendly formats are data files, HTML files, or other types of files. The market reporting system 440 provides other systems access to the performance information. For instance, a user system within Internet 145 could access the market reporting system 440 and view the performance information using a Web browser. Also, the national performance management system 230 and/or the regional performance management system 330 could retrieve the performance information from the market reporting system 440 for storage in the national database system 235 and the regional database system 335, respectively.

The market system manager 450 monitors and stores routing information for upstream and downstream routing within the broadband wireless system 100. The market system manager 450 provides other systems access to the routing information.

5 The contention server 455 receives configuration information from a content delivery network through the satellite receiver 460. The configuration information is used to pre-configure the market performance management system 430 or the market system manager 450. The configuration information is also used to update or re-configure the market performance management system 10 430 or the market system manager 450.

FIG. 5 is a block diagram that illustrates the head end 500 in an example of the invention. The head end 500 is comprised of a router 505, a switch 510, an upstream manager 515, a downstream manager 520, a patch panel 525, a receiver system 530, a transmitter system 535, an Optical-to-Electrical (O/E) converter 585, a satellite receiver 587, and a base antenna 540. The receiver system 530 is comprised of a down-converter 545, a receiver 550, and a Low Noise Amplifier (LNA) 555. The transmitter system 535 is comprised of an up-converter 560 and a transmitter 565. The base antenna 540 is comprised of a transmitter antenna 570, a receiver antenna 575, and a satellite antenna 580. 15
20 The head end 500 also includes a channel probe 590 and a Remote MONitoring (RMON) probe 595.

Those skilled in the art will appreciate that the base antenna 540 could be positioned at a high altitude to improve communications. For instance, the base antenna 540 could be positioned on a mountain or a tall building. Consequently, 25 the base antenna 540 could be placed at a remote location in relation to the head end 500. The base antenna 540 has a range of approximately 35 miles.

The router 505 is a 7500 series router from Cisco Systems. The switch 510 is a 6500 series switch from Cisco Systems. The upstream manager 515 is configured to manage data on upstream channels. The upstream manager 515 30 is a CyberMaster Upstream Router (CMU-2000-14C) from Hybrid Networks, Inc. The downstream manager 520 is configured to manage data on downstream

channels. The downstream manager 520 is a CyberMaster Downstream Router (CMD-2000) from Hybrid Networks, Inc. The patch panel 525 is from PESA Switching Systems, Inc. The receiver system 530 is configured to receive a Radio Frequency (RF) signal and convert the RF signal into an Intermediate Frequency (IF) signal. The receiver system 530 is a receiver from ADC Telecommunications Co. The transmitter system 535 is configured to receive an IF signal and convert the IF signal into an RF signal. The base antenna 540 is an antenna from Andrew Corp. The RMON probe 595 is a NetScout probe from NetScout Systems, Inc.

The router 505 connects with the market hub 400 over the link 127. The router 505 connects with the switch 510 over a link 511. The link 511 is a Gigabit Ethernet connection. The switch 510 connects with the upstream manager 515 over a link 512 and the downstream manager 520 over a link 513. The upstream manager 515 connects with the patch panel 525 over a link 514. The downstream manager 520 connects with the patch panel 525 over a link 516. The links 512-514 and 516 are configured to transport Transmission Control Protocol/Internet Protocol (TCP/IP) packets.

The patch panel 525 connects with the receiver system 530 over a link 517. The link 517 is configured to transport an IF signal. The receiver system 530 connects with the receiver antenna 575 of the base antenna 540 over a link 521. The link 521 is a wire cable configured to transport an RF signal.

The receiver system 530 connects with the satellite receiver 587 over a link 526. The satellite receiver 587 connects with the satellite antenna 580 on the base antenna 540 over a link 524. The links 526 and 524 are coaxial cables.

The receiver system 530 connects to the O/E converter 585 over a link 523. The O/E converter 585 connects with the receiver antenna 575 on the base antenna 540 over a link 522. The link 522 is a fiber optic cable.

The patch panel 525 connects with the transmitter system 535 over a link 528. The link 528 is configured to transport an IF signal. The transmitter system 535 connects with the transmitter antenna 570 on the base antenna 540 over a link 531. The link 531 is a wire cable configured to transport an RF signal.